Listing of Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-14 (canceled)

15. (previously presented) A method of characterization of an interference source of a communication signal in a communication system, the method comprising:

(a) characterizing the interference source by determining the interference source signal type;

(b) estimating the interference signal transmission rate by searching for periodic frequency regions of the communication signal using a sequence of known symbols of the communication signal;

(c) performing a service type identification; and

(d) estimating a channel impulse response of the interference signal.

16. (previously presented) The method according to claim 15, wherein searching for periodic frequency regions of the interference signal comprises:

performing a non-linear operation on the communication signal; and

performing a Fast Fourier Transform analysis.

17. (previously presented) The method according to claim 16, wherein performing a non-linear operation on the communication signal comprises taking the square value of the communication signal.

18. (previously presented) The method according to claim 15, wherein estimating a channel impulse response comprises using the sequence of known symbols of the communication signal.

19. (previously presented) The method according to claim 18, wherein the sequence of known symbols of the communication signal is a periodic signal with period equal to a frame length corresponding to the service type.

20. (previously presented) The method according to claim 15, wherein estimating the channel impulse response comprises:

dividing the communication signal in a plurality of frequency regions; and

averaging the plurality of frequency regions into an average frame of signal symbols.

21. (previously presented) The method of claim 20, wherein estimating the channel impulse response is performed using the known symbols of the communication signal as an input and the average frame of signal symbols as an output.

22. (previously presented) The method according to claim 15, wherein the interference source is a cross-talk disturber.

23. (previously presented) The method according to claim 15, wherein the interference source comprises a plurality of distinct interference signals.

24. (currently amended) The method according to claim 15, wherein estimating a channel impulse response of the interference signal comprises evaluating a ~~multiple-input single-output~~ multiple-input, single-output system.

25. (previously presented) The method according to claim 23 further comprising performing steps (b) through (d) for each of the plurality of interference signals.

26. (previously presented) The method according to claim 15, wherein the interference source is a Pulse Amplitude Modulation signal.

27. (previously presented) The method according to claim 15, wherein the interference source is a Quadrature Amplitude Modulation signal.

28. (previously presented) The method according to claim 15, wherein the interference source is a Carrierless Amplitude and Phase Modulation signal.

29. (previously presented) The method according to claim 15, wherein the communication system is a Digital Subscriber Line system.

30. (previously presented) The method according to claim 15, wherein the communication system is a wireless communication system.

31. (previously presented) The method according to claim 15, wherein the communication system is a cable communication system.

32. (previously presented) The method according to claim 15, wherein the communication system is an optical communication system.

33. (previously presented) A method of characterization of an interference source in a communication signal within a communication system, the method comprising:

determining the interference source signal type;

estimating the interference signal transmission rate comprising:

dividing the bandwidth of the communication signal in a plurality of frequency regions;

selecting a plurality of frequency regions by performing a frequency zoom in analysis of the communication signal; and

detecting harmonic components of the communication signal for each of the plurality of frequency regions;

performing a service type identification; and

estimating a channel impulse response of the interference signal.

34. (previously presented) The method of claim 33, wherein a frequency zoom in analysis comprises:

modulating the communication signal by a nominal frequency; and

reducing the bandwidth of the signal to the bandwidth of the frequency region.

35. (previously presented) The method according to claim 34, wherein reducing the bandwidth of the signal comprises a filtering technique.

36. (previously presented) The method according to claim 33, wherein estimating the interference signal transmission rate further comprises:

performing a non-linear operation on the communication signal; and

performing a Fast Fourier Transform analysis.

37. (previously presented) The method according to claim 36, wherein performing a non-linear operation on the communication signal comprises taking the square value of the communication signal.

38. (previously presented) The method according to claim 33, wherein estimating a channel impulse response comprises using a sequence of known symbols of the communication signal.

39. (previously presented) The method according to claim 38, wherein the sequence of known symbols of the communication signal is a periodic signal with period equal to a frame length corresponding to the service type.

40. (previously presented) The method according to claim 33, wherein estimating the channel impulse response comprises:

dividing the communication signal in a plurality of frequency regions; and

averaging the plurality of frequency regions into an average frame of signal symbols.

41. (previously presented) The method of claim 40, wherein estimating the channel impulse response is performed using the known symbols of the communication signal as an input and the average frame of signal symbols as an output.

42. (previously presented) The method according to claim 33, wherein interference source is a cross-talk disturber.

43. (previously presented) The method according to claim 33, wherein the interference source comprises a plurality of distinct interference signals.

44. (currently amended) The method according to claim 33, wherein estimating a channel impulse response of the interference signal comprises evaluating a ~~multiple-input single-output~~ multiple-input, single-output system.

45. (previously presented) The method according to claim 33, wherein the interference source is a Pulse Amplitude Modulation signal.

46. (previously presented) The method according to claim 33, wherein the interference source is a Quadrature Amplitude Modulation signal.

47. (previously presented) The method according to claim 33, wherein the interference source is a Carrierless Amplitude and Phase Modulation signal.

48. (previously presented) The method according to claim 33, wherein the communication system is a Digital Subscriber Line system.

49. (previously presented) The method according to claim 33, wherein the communication system is a wireless communication system.

50. (previously presented) The method according to claim 33, wherein the communication system is a cable communication system.

51. (previously presented) The method according to claim 33, wherein the communication system is an optical communication system.

Claims 52-54 (canceled)

55. (previously presented) A computer readable medium containing executable instructions which, when executed in a processing system, causes said system to perform a method of characterization of an interference source of a communication signal in a communication system, the method comprising:

(a) characterizing the interference source by determining the interference source signal type;

(b) estimating the interference signal transmission rate by searching for periodic frequency regions of the communication signal using a sequence of known symbols of the communication signal;

(c) performing a service type identification; and

(d) estimating a channel impulse response of the interference signal.

56. (previously presented) A computer readable medium containing executable instructions which, when executed in a processing system, causes said system to perform a method of characterization of an interference source of a communication signal in a communication system, the method comprising:

estimating the interference signal transmission rate comprising:

dividing the bandwidth of the communication signal in a plurality of frequency regions;

selecting a plurality of frequency regions by performing a frequency zoom in analysis of the communication signal; and

detecting harmonic components of the communication signal for each of the plurality of frequency regions;

performing a service type identification; and

estimating a channel impulse response of the interference signal.

Claim 57 (canceled)

58. (previously presented) An article of manufacture comprising a program storage medium readable by a computer and tangibly embodying at least one program of instructions executable by said computer to perform a method of characterization of an interference source of a communication signal in a communication system, the method comprising:

(a) characterizing the interference source by determining the interference source signal type;

(b) estimating the interference signal transmission rate by searching for periodic frequency regions of the communication signal using a sequence of known symbols of the communication signal;

(c) performing a service type identification; and

(d) estimating a channel impulse response of the interference signal.

59. An article of manufacture comprising a program storage medium readable by a computer and tangibly embodying at least one program of instructions executable by said computer to perform a method of characterization of an interference source of a communication signal in a communication system, the method comprising:

estimating the interference signal transmission rate comprising:

dividing the bandwidth of the communication signal in a plurality of frequency regions;

selecting a plurality of frequency regions by performing a frequency zoom in analysis of the communication signal; and

detecting harmonic components of the communication signal for each of the plurality of frequency regions;

performing a service type identification; and

estimating a channel impulse response of the interference signal.

Claim 60 (canceled)